

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. 09/840,270
ATTORNEY DOCKET NO. Q64186

REMARKS

Claims 1-16 are all the claims pending in the application. Claim 1-16 have been rejected as allegedly unpatentable under 35 U.S.C. § 103.

Claims 5 and 15 have been amended so that each now depend on Claims 1 or 2.

Rejection of Claims 1-16 Under 35 U.S.C. § 103(a)

Claims 1-16 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Japanese document 11-309761 (“JP ‘761”) in view of U.S. Patent No. 4,697,939 to Obuchi et al. (“Obuchi”).

The Examiner asserts that JP ‘761 teaches the basic claimed process for making a light-transmitting plate by injecting a PMMA polymer into a mold using an injection cylinder which feeds the resin to the mold. The Examiner further asserts that JP ‘761 discloses an injection rate of 20-100 cm³/sec.

The Examiner concedes that JP ‘671 fails to teach the instantly claimed injection rate (1-15 cm³/sec), resin viscosity (50-5000 Pa·sec) and the “particulars” of the injection. The Examiner asserts, however, that it would have been obvious to one of ordinary skill in the art to modify the JP ‘761 process in order to arrive at the presently-claimed invention.

Applicants’ Response

Before the invention of the presently-claimed method, it had been difficult to produce a light-transmitting plate with a large size, especially a large light-transmitting plate with a diagonal length of more than 14 inches. *See* page 5, line 20, through page 8, line 8, of the specification.

The instantly-claimed method overcomes the problems of the prior art. Furthermore, the instantly-claimed method produces a plate with uniform thickness and dimensional stability at an reduced production cost. *See* page 8, lines 10-18, of the specification. Applicants note that the claimed method can also be used to produce small plates, as well as light plates.

Applicants respectively assert that the Examiner has failed to make a *prima facie* case of obviousness. Applicants assert that sufficient motivation does not exist for one of ordinary skill in the art to modify the teachings of JP '761 in order to arrive at the present invention.

As conceded by the Examiner, JP '761 fails to teach an injection rate of 1-15 cm³/sec, a resin viscosity of 50-5,000 Pa/sec and other conditions related to the injection. Furthermore, the Examiner notes that JP '761 discloses that if the injection speed is less than 20 cm³/sec, a larger-sized plate is difficult to make. Thus, Applicants respectfully assert that JP '761 teaches away from the instantly-claimed process.

Applicants further assert that Obuchi fails to provide the motivation to employ the instantly-claimed injection speed. Therefore, Applicants assert that the prior art fails to provide the motivation for a process wherein the injection speed is 1-15 cm³/sec. Accordingly, Applicants assert that a *prima facie* case of obviousness has not been established.

Applicants further assert that neither resin viscosity nor injection rate are optimizable variables. Applicants assert that the instantly-claimed ranges are critical for producing a light-transmitting plate with the desired attributes. Applicants note that the presently claimed ranges are critical for producing a light-transmitting plate with uniform thickness and good dimensional stability. Applicants note that if the injection rate is too low, the glass plate has a poor

appearance, uneven thickness and poor dimensional precision. Conversely, if the injection rate is too high, shrinking may result and the resulting plate will have uneven thickness and poor dimensional precision. *See* page 12, lines 1-6, of the specification. With respect to the viscosity of the molten resin, the instantly-claimed viscosity prevents the appearance of a sink mark. *See* page 12, lines 20-22, of the specification.

Turning to the rejection of Claims 2-16, Applicants assert that the prior art fails to teach or suggest each and every element recited in the claims. Applicants respectively assert that the “common knowledge” relied upon by the Examiner does not remedy the deficiencies of JP ‘761 and Obuchi.

With respect to Claim 2, it is the Examiner’s position that method set forth in the claim is conventional.

Claim 2 recites that the molten resin is continuously filled into a mold cavity with rotation of a screw under the nonobvious conditions recited in claim 1. Specifically, Applicants assert that feeding a molten resin by the rotation of a cylinder screw coupled with the injection of the resin at a low injection rate. Applicants note that these conditions contribute to a molded plate that exhibits unexpected advantages in formability.

Applicants also point out that the conditions recited in Claim 2 allow for the production of a plate with a larger volume than the volume of the cylinder due to the continuous injection of the resin at a low rate. In addition, the low in-mold pressure of the claimed process is about half of that required for ordinary injection molding and allows for the molding of a large plate with a low clamping force. *See* page 14, line 8, through page 15, line 3, of the specification.

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In view of these unexpected advantages, in addition to nonobviousness of Claim 1, Applicants respectfully assert that Claim 2 is nonobvious over the prior art.

With respect to Claim 5, Applicants assert that, in view of the arguments set forth above regarding Claim 1, the prior art fails to teach an injection rate of 4-11 cm³/sec. In addition, Applicants note that Table 1 on page 36 of the specification demonstrates that the injection rate of Claim 5 results in a molded plate which exhibits an unexpectedly superior appearance with respect to the teachings of JP '761.

Turning to the rejection of Claim 15, Applicants assert that process conditions recited in the claim result in the unexpected advantage of a molded plate which can have a pattern precisely transferred thereon. Applicants note that the prior art does not suggest that the claimed process conditions would produce a molded plate which can have a pattern precisely transferred thereon.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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